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An FDI is an FDI is an FDI?
The growth effects of greenfield investment and mergers and acquisitions in developing countries

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Abstract: We explore the effect of foreign direct investment (FDI) on economic growth in developing countries, distinguishing between mergers and acquisitions ("M&As") and "Greenfield" investment. We find that these two types of FDI differ substantially with respect to their influence on growth. While Greenfield FDI substantially enhances growth, M&As have no effect, at best. We also demonstrate that, in contrast to Greenfield FDI, a larger volume of M&As results in an appreciated real exchange rate. The resulting loss in price competitiveness may explain the poor growth effect of the M&A variant of FDI.

Keywords: Growth, foreign direct investment, mergers and acquisitions, green-field investment.

JEL classification: F21, F23, F43, O16.

1. Introduction

Foreign direct investment (FDI) is often viewed as a particularly desirable form of capital. However, the evidence of a positive effect of FDI on growth is mixed. Doucouliagos et al. (2010) report that out of the 880 regressions reported in the 108 empirical studies using cross-country data published before 2009, only 43% report a significantly positive coefficient, while 17% are significantly negative and 40% insignificant.

However, FDI is heterogeneous. It is theoretically defined by the fact that it represents a capital flow that is motivated by industrial, as opposed to financial, considerations, but this definition is hardly operational empirically. Official statistics therefore consider a capital flow to be FDI if it exceeds ten percent of the investor's affiliate abroad. Both definitions pool together two very different forms of foreign investment: *greenfield investment*, whereby foreign investors build a new productive unit from scratch, and *mergers and acquisitions* (M&As), whereby the foreign investor acquires existing assets. Those two forms of foreign investment fundamentally differ. There is little doubt that greenfield investment increases the host country's physical capital stock. Whether M&As do is an open question. Essentially they consist in the sale of existing domestic assets to a foreign acquirer. What the seller does with the proceeds of that sale is left to his/her discretion.

Since M&As and greenfield investment are usually pooled together under the heading FDI, the empirical literature's implicit assumption is that the seller use those proceeds to invest in the domestic economy. There are however alternatives. In the extreme, the seller can spend his/her revenue on imported consumption goods, with no positive effect on the host country's economy. The impact of green-field investment and M&As on the host country should therefore differ.

The aim of this paper is to empirically investigate the difference between the impact of green-field investment versus M&As on growth. To do so, the rest of the paper is organized as follows. The next section discusses the reasons why the impact of total FDI on growth may be either positive or negative, and the extent to which greenfield investment and M&s differ. Section 3 provides a break-down of total FDI in greenfield investment and M&As, and presents the resulting data. Section 4 presents the empirical strategy followed to investigate

the relationship between total FDI, greenfield investment, and M&As. Section 5 displays our main findings. Section 6 discusses the mechanism that may drive them. The last section concludes.

2. The relation between FDI, its components and growth

From a theoretical standpoint, FDI can have both positive and adverse effects on the host's country growth. In this section, we first survey those effects, then discuss whether they are more likely to appear following M&As or greenfield investment.

2.1. The positive effects of FDI on growth

As FDI is first and foremost a capital inflow, its most obvious effect on growth runs through capital accumulation. In a world with decreasing marginal returns to investment, the return to investing in a country should be lower the lower its capital stock. Accordingly, capital should flow from capital-abundant countries to capital-poor countries, eventually equalizing the return to capital across countries. This is what Prasad et al. (2007) refer to as the textbook theory of foreign capital and growth. According to that theory, FDI should add up to the host country's capital stock. That effect may be transitory, according to the standard neoclassical growth model, or definitive, according to endogenous growth theories. In any case, FDI inflows should be associated to a rise in output and at least a transient growth acceleration.

However, FDI is a particular form of capital inflow, which may not only affect the capital stock but also productivity, either directly or through spillover effects. The contention that FDI affects the productivity of foreign firms' subsidiaries in the host country goes back to has been integrated in growth theory at least since Findlay (1978). It has moreover been central to the theory of multinational firms since its early contributions, such as Caves (1974). Hymer (1976) even relates the existence of multinational firms to their ownership of technological assets. The contention has received overwhelming empirical support, which Harrison and Rodríguez-Clare (2010) summarize by writing that the direct effect of foreign firms on the productivity of their subsidiaries is the most important contribution.

The direct of FDI on the productivity of foreign affiliates may be complemented by spillovers effects. One may indeed expect the knowledge imported by foreign firms to spill

over to the other firms of the industries where they operate. Early findings, like those reported by Blomström and Wolff (1994) suggested the existence of such horizontal spillover effects. However, in an influential paper, Aitken and Harrison (1999) showed that the literature's optimistic findings were due to a misspecification of the estimated relation between foreign investment and productivity, and that the relation was, at best insignificant. Recently, however, Keller and Yeaple (2009) could report evidence of horizontal spillovers in high-technology sectors.

Finally, foreign direct investments may also affect productivity in other firms located in their supply chain, thereby producing vertical spillovers. Foreign firms' subsidiaries may indeed have an incentive to improve the productivity of their suppliers. In line with this intuition, Smarzynska Javorcik (2004) reported evidence of positive spillovers from foreign firms operating in Lithuania on the upstream part of their supply chain.

2.2. The adverse effects of FDI on growth

Both factor accumulation and spillover effects should result in FDI inflows being associated with faster growth of their host country. However, the list of possible adverse effects of FDI suggested in the literature is longer than the list of positive effects. For clarity's sake, they can be lumped in three broad categories: government-induced distortions, market distortions, and macroeconomic effects.

The first government-induced distortion that may result in FDI reducing growth is the application of preferential tax treatment. Easterly (1993) constructs an endogenous growth model with two types of capital, and shows that subsidies to one sort of capital financed by a tax on the other may distort incentives in a way that reduces growth. As most countries try to attract FDI through tax exemptions and tax heavens, Easterly's (1993) argument suggests a negative impact of FDI on growth.

Trade barriers are a similar government-induced distortion that may limit the positive effects of FDI. Borenzstein et al. (1998) remark that circumventing trade restrictions is a common motivation of FDI. In that case, cross-border capital flows may be little related to differences in productivity, and thus have no effect or a negative effect of growth in the host country. Sadik and Bolbol (2001) report evidence for Arab countries that supports

Borenzstein et al.'s (1998) contention. They argue that those countries' markets are protected, and report negative correlations between FDI and growth.

The second series of distortions that may make the impact of FDI on growth negative are failures on the good market. Rodríguez-Clare (1996) builds a static model where the impact of multinational firms producing a final good can impose a negative externality on the host country's economy The rationale is that in the presence of a love for variety of intermediate inputs in the final good sector, foreign firms may reduce the number of available intermediate goods in the economy if their employment linkages with upstream domestic firms are smaller than those of their domestic competitors. To explain the lack of evidence of horizontal spillovers in their sample of Venezuealan firms, Aitken and Harrison (1999) moreover suggest that foreign entrants may steal the business of domestic firms, in particular smaller firms.

The third, and possibly largest, series of distortions are probably to be found in the credit market. Early contributions suggested that market failures on that market could result in a misallocation of capital that may render foreign investment innocuous or even harmful. Such a possibility appears in a model of investment with adverse selection and costly state verification built by Boyd and Smith (1992). Razin et al. (1999) complement that intuition by building a model where they assume that foreign firms investing in a country acquire an informational advantage over domestic savers on the quality of firms. They can then keep the high-productivity firms and sell the others to domestic savers. In that context, foreign investors may have an incentive to overinvest in the host country, again resulting in a misallocation of capital.

When one considers that FDI can be financed locally, an additional growth-reducing effect appears on the credit market, because foreign firms may crowd-out domestic firms. The suspicion of a crowding-out effect of domestic appeared in two studies of Ivory Coast where Harrison and McMillan (2003) observe that the share of foreign long-term borrowing at the sector level exacerbates domestic firms' credit constraints.[1] Alfaro et al. (2009) provide a

[1] Harrison et al. (2004) find opposite result in a panel of countries, which suggests that the impact of FDI on the access to credit of domestic depends on the extent of market imperfections in a country.

theoretical backing to the possibility of a crowding-out effect of domestic firms by FDI in financially underdeveloped countries.

Finally, FDI may also slow down growth because it results in real overvaluation of the currency of the host country. The point is made by Prasad et al. (2007) to explain the finding that capital exporting countries do not grow any slower than capital importing countries. In line with their hypothesis, they find that capital inflows are associated with real overvaluation of the domestic currency in a sample of non-industrialized countries. FDI inflows thereby impair the exports of manufactured goods, and result in a Dutch-syndrome.

FDI inflows may then have either positive or adverse effects on growth. Whether the net balance is negative or positive is therefore essentially an empirical matter. However, the net balance may also on the entry mode of foreign investors. The next subsection discusses that issue.

2.3. The balance of positive and adverse effects of M&As and greenfield investment

To discuss the distinct effect of M&As and greenfield investment on growth, one may follow the same outline as in the previous subsection, and consider capital accumulation, before government-induced distortions before, and productivity growth.

Firstly, all capital inflows may not result in capital accumulation. Admittedly, greenfield investment necessarily result in new assets being created, but use of the proceeds of M&As may be quite different. In particular, the proceeds of M&As may be simply consumed, without resulting in any additional productive capacity. The point is made by Mencinger (2003), who studies eight EU-candidates countries over the period 1994-2001. During that period, acquisitions were the chief form of FDI in those countries. In line with the hypothesis that politically-motivated sales of public assets resulted in current consumption and imports, Mencinger (1993) finds that FDI inflows did not affect overall investment, but were significantly related to a larger current account deficit and debt accumulation. Accordingly, one should expect a less systematic impact on growth of M&As than of greenfield investment.

Secondly, the role of the government in determining the volume and quality of FDI can be crucial during privatizations programs. The privatization of public enterprises results in

FDI if the acquirers of those enterprises are foreign firms. Loungani and Razin (2001) and Krugman (1998) then remark that there is no guarantee that the assets that the State sells to foreign investors will be run better. They could even be run less efficiently if the transfer of ownership is fraught with adverse selection. As Krugman (1998) points out, that will be the case if the foreign corporations that seize control of domestic enterprises do not have special competence, but simply have cash while the locals do not. Fire sales of public assets may thus result in a waste of resources. By construction, this argument only applies to existing assets. It therefore points to a potentially detrimental effect of M&As, but does not bear on greenfield investment.

Thirdly, the two modes of entry may result in different transfers of technology. To our knowledge, no direct evidence or theory is available, but one may draw inferences from related theoretical reflections and empirical findings. Marin and Sasidharan (2010) for instance distinguish foreign subsidiaries operating in India according to their research activities. They distinguish "competence creating" subsidiaries, which carry out technological efforts, and "competence exploiting" subsidiaries, and find that only the former generate positive spillover effects. Their distinction is reminiscent of Dunning and Narula (1995) between "asset-exploiting" and "asset-augmenting" subsidiaries. As a result, M&As are unlikely to result in positive spillovers if they are not complemented by greenfield investment. Marin and Bell (2006) report similar results on a sample of Argentinean firms, showing that spillovers are larger when local subsidiaries undertake technological activities. These contributions all suggest that an acquisition must be followed by investments in the new subsidiary to lead to positive spillovers.

To our knowledge, there is only one reference that systematically distinguishes pure greenfield investment from M&As, namely Calderón et al. (2004). Their study, however, uses a vector autoregression to explore the interaction between the two types of FDI, and does not consider their long-run growth effects. We are aware of no other contribution that studies the impact of the different components of FDI separately.

3. Greenfield FDI vs. Mergers and Acquisitions: A First Look at the Data

Data on total FDI inflows and on sales of assets associated with Mergers&Acquisitions ("M&A Sales") are provided by UNCTAD for a large number of countries. We follow Calderon et al. (2004) in defining "Greenfield FDI" inflows as the difference between total FDI inflows and M&A sales. While the resulting negative numbers for some countries and time periods should not worry too much - FDI inflows may become easily negative if the parent company repatriates profits without providing new capital – there might be an issue with the timing of transactions: as UNCTAD (2007:92) emphasizes, "... M&A statistics are those at the time of the closure of the deals, and not at the time of announcement. The M&A values are not necessarily paid out in a single year." We believe that this constellation, which might result in overrating M&A values (relative to the total volume of FDI reported by the balance of payments) for individual years, does not weigh too heavily if we look at longer-run averages. Using five-year averages, this is, in fact, what we do.

*** Insert Figure 1 around here ***

A look at Figure 1 suggests that the share of Greenfield FDI as a share of total FDI in developing countries decreased substantially around the turn of the millennium – due, probably to a wave of M&As in the context of large-scale privatizations. More recently, this share has picked up again. The stark decline of M&As in the years 2002 and 2003 suggest that business-cycle conditions in the US and Europe may be important. Total FDI, by contrast, has proven to be quite resilient during this period. Figure 2 shows the evolution of Greenfield FDI and M&As (in 1000s of US dollars) for four different countries: Argentina, Bulgaria, China and Senegal. For Argentina and Bulgaria, the bulk of FDI inflows came in the form of M&As at times, while China and Senegal predominantly attracted Greenfield FDI.

*** Insert Figure 2 around here ***

4. A Disaggregated View on the Growth Effects of FDI

4.1. The Regression Equation

In what follows, we will estimate variants of the following standard growth regression equation:

$$\ln y_{it} - \ln y_{i,t-1} = \alpha + \beta \ln y_{i,t-1} + \gamma\ FDI_{it}^{M\&A} + \delta\ FDI_{it}^{Greenfield} + \sum_{k=1}^{N} \varphi_k x_{it}^k + \xi_t + \varepsilon_{it} \qquad (1)$$

where the left-hand side is the growth rate of real per-capita GDP over a five-year period, $\ln y_{i,t-1}$ is the (log of) initial per-capita GDP at the start of that period, $FDI_{it}^{M\&A}$ and $FDI_{it}^{Greenfield}$ are the two types of FDI inflows – mergers and acquisitions sales and "Greenfield FDI" – whose effect we want to analyze. The set of control variables x_{it}^k that is used to avoid omitted variable bias will be described below. The time dummies ξ_t are meant to capture period-specific effects – such as global growth surges and recessions – that might blur the separate effect of FDI. Since the disturbance ε_{it} possibly doesn't have a constant variance and since it is possibly correlated across time periods, our inference will be based on a cluster-robust covariance. Later on, we will also add *fixed effects* to account for unobserved heterogeneity. Moreover, we will confront the potential endogeneity of FDI with respect to growth by estimating (1) by two-stage least squares (TSLS).

Using five-year averages in growth regressions has first been suggested by Islam (1995) as well as Caselli et al. (1996). While the question whether an quinquennial structure is appropriate for discovering long-run growth effects might be debated, using a panel data set instead of the purely cross-sectional structure as in Barro (1993) offers the huge advantage of controlling for unobserved heterogeneity.

4.1. Data

Our data set comprises some 80 low-income and middle-income countries.[2] Since we are predominantly interested in the growth effects of "M&A-type FDI" and "Greenfield-type FDI" – with the latter defined as the difference between total FDI inflows and M&A sales – our sample is constrained by the availability of these data. As reported in Section 3, data on M&A sales as well as data on total FDI inflows are provided in the UNCTAD's World Investment Report (UNCTAD 2009), and are available on an annual basis since 1987. To estimate the parameters of equation (1), we are using the intervals 1987-90, 1991-95, 1996-2000, 2001-05.

As for the normalization of FDI flows, we are following the standard approach to divide M&A/Greenfield FDI (in current US dollars) in a given year by GDP (in current US dollars) in the same year.[3] The variables $FDI_{it}^{M\&A}$ and $FDI_{it}^{Greenfield}$ are five-year averages of these ratios. To demonstrate that our results do not hinge on that particular choice, we will also explore the effect of FDI relative to the recipient country's *population*.

Below we will report the results of using a *small* set of control variables and a *large* set of control variables.[4] The *small* set of control variables consists of growth determinants suggested by the human-capital augmented Solow model, as introduced by Mankiw et al. (1992): the average **gross secondary school enrolment rate**, the average **share of investment in GDP** and the average **population growth rate**. As suggested by neoclassical growth theory, we expect the secondary school enrolment rate and the investment share to have a positive effect while the population growth rate should have a negative effect.[5] For the large set of control variables, we add the average **inflation rate**, the **share of government consumption in GDP**, a standard measure of **trade openness** – exports + imports relative to

[2] We start by excluding countries with less than one million inhabitants. As we will demonstrate below, this choice is inconsequential for our main results.

[3] GDP data are from the World Bank's Word Development Indicators (World Bank, 2010).

[4] Details on the definition and the sources of all variables are given in the Data Appendix.

[5] Note that including both FDI and total investment (as a share of GDP) in the regression reduces the danger of overrating the effect of FDI .

GDP – as well as the Fraser Institute's index that reflects the **quality of the legal structure and the security of property rights**. Finally, we include a dummy for oil-exporting countries and regional dummies.[6]

5. Results

5.1. Benchmark Results

Table 1 reports the results of estimating equation (1) by pooled OLS. We start by implicitly imposing the restriction that $\gamma = \delta$ and estimate the influence of total FDI (as a share of GDP) on growth (column 1.1). While the control variables' coefficients have the expected signs, they fail to be significantly different from zero. Total FDI, by contrast, has a significantly positive impact on growth. Moving to column (1.2), we see that this effect is predominantly driven by Greenfield FDI: while the coefficient of the M&A-regressor is negative, though insignificant, the coefficient of Greenfield FDI is significantly positive and somewhat higher than the coefficient of total FDI in column (1.1). The sharp difference between the two types of FDI also emerges once we include the large set of control variables in column (1.3). In addition, we see evidence of conditional convergence – i.e. a significantly negative effect of initial GDP – and lower standard errors for most other regressors once we use the larger set of control variables . This pattern – total FDI having a significantly positive effect which is largely driven by its "Greenfield" component – can also be seen when we divide investment flows by the host countries' population instead of GDP (see columns (1.4) – (1.6)).

*** Insert Table 1 around here ***

The findings presented in Table 1 may be biased due to country-specific variables which are correlated with the regressors and which we could not account for explicitly (unobserved

[6] To improve the readability of our tables, we do not display the coefficients of the regional dummies. Those results are available upon request.

heterogeneity), or due to a reverse causal relationship between growth and FDI. To meet the problem of unobserved heterogeneity, we estimate equation (1) using the fixed effects estimator. Columns (2.1) and (2.2) give the results, indicating that our previous findings were not driven by omitted variable bias: while the coefficient of Greenfield FDI is somewhat lower relative to the pooled OLS result, it is still relatively close. In a next step, we tackled the (potential) endogeneity problem head-on: specifying a set of excluded instruments, which are correlated with FDI, but uncorrelated with the disturbance, we estimated equation (1) by two-stage least squares (TSLS).[7] Column (2.3) presents the results from lumping M&As and Greenfield FDI together: first, higher total FDI inflows (relative to GDP) have a positive effect on GDP growth, even if we account for the potential endogeneity of FDI. The F-statistic of the first-stage regression and the p-value of Hansen's J-statistic support the notion that our instruments are both relevant and exogenous. Column (2.4) presents the results of treating Greenfield FDI as a potentially endogenous variable. While it could be claimed that mergers and acquisitions are no less susceptible to the endogeneity problem, Eichengreen (2008:19) argues that "the literature on mergers and acquisitions (a form of FDI) suggests that such activity depends on the internal resources of firms in the acquiring countries.[...] Hence, there will be a component of FDI in emerging markets that is exogenous with respect to economic conditions there." Estimating equation (1) by TSLS also a higher coefficient and thus reinforces our previous results: while M&A-type FDI has no effect on economic growth, the influence of Greenfield FDI is significantly positive.

*** Insert Table 2 around here ***

The last two columns of Table 3 show the results of applying the Blundell-Bond "Systems GMM" estimator to equation (1). The rationale for using this estimator is that equation (1) can be rewritten as

[7] The instruments used are: the *Polity-IV* measure of political participation, the "investment profile" index from the *International Country Risk Guide*, a dummy for landlocked countries, the initial stock of FDI liabilities as a share of GDP, and the lagged growth rate of the main trading partners' GDP.

$$\ln y_{it} = \alpha + (1+\beta)\ln y_{i,t-1} + \gamma\ FDI_{it}^{M\&A} + \delta\ FDI_{it}^{Greenfield} + \sum_{k=1}^{N} \varphi_k x_{it}^k + \xi_t + \varepsilon_{it}\,, \qquad (2)$$

which reveals the presence of a lagged dependent variable. However, applying the fixed effects estimator to such an equation results in biased estimates, since the error term is mechanically correlated with one of the regressors. "Systems-GMM" estimator reacts to this problem by combining two equations: a first-differenced version of (2) is estimated using lagged levels of the regressors as instruments, and the original equation (2) is estimated using lagged differences as instruments. The results in column (2.5) indicate that ignoring this issue lead us to under-estimate the coefficient of the lagged dependent variable.[8] However, this does not invalidate our key results that total FDI has a significantly positive influence on growth (column 2.5), and that this influence is predominantly driven by Greenfield FDI (column 2.6). Interestingly, the estimated coefficient for $FDI_{it}^{Greenfield}$ is between the findings from the FE and the TSLS estimation and does not differ too much from the original OLS results.

5.2. Robustness Checks: Varying Samples

Table 3 presents the results from estimating equation (1) using Pooled OLS for various subsamples: columns (3.1) and (3.2) are based on a dataset that excludes upper-middle income countries, while columns (3.3) and (3.4) exclude low-income countries. In both cases, the sample shrinks substantially, but this does not destroy our key result: There is a positive effect of FDI on economic growth in developing countries, but this effect is predominantly driven by the greenfield investments. By contrast, M&A sales have a negative (though insignificant) influence on growth. Including small countries that are characterized by a population of less than a million results in a somewhat larger sample and, again, confirms our

[8] Column (2.1) suggests a coefficient of $y_{i,t-1}$ of (1 - 0.319) = 0.681, which is substantially smaller than the 0.89 reported in column (2.5).

result. Note that the coefficient of greenfield FDI is surprisingly similar across these different subsamples.

*** Insert Table 3 around here ***

Table 4 splits the sample along the time dimension: columns (4.1) and (4.2) report the results of estimating equation (1) for the first half of the sample, while columns (4.3) to (4.4) refer to the second half. Interestingly, neither total FDI nor Greenfield FDI had significantly positive effect during the late 1980s and the early 1990s. Conversely, considering the years after 1996 re-establishes our previous result that the positive influence of Greenfield FDI drives a significantly positive effect of total FDI. Apart from supporting our distinction between different types of foreign direct investment, these results also suggest that the growth effects of FDI may have intensified in past years. The fact that we are using a more recent sample of data may thus explain why – in contrast to much of the existing literature – we find a significantly positive influence of FDI on economic growth.

*** Insert Table 4 around here ***

6. The Role of the Real Exchange Rate

The results presented so far suggest that FDI has a significantly positive effect on FDI. However, this effect is exclusively driven by the "greenfield" variant of foreign direct investment, while the sale of existing firms to foreign multinationals in the context of "mergers and acquisitions" has no effect at best. How can we reconcile this finding with the strong empirical evidence at the firm-level, which shows that changes of ownership and the entry of a multinational parent company regularly enhances the productivity of the subsidiary? Is there, indeed, a micro/macro puzzle, with foreign takeovers being beneficial at the firm level, but ineffective in the economy as a whole?

In what follows, we will explore the role of the real exchange rate as one potential channel through which different types of FDI might have different growth effects. The idea that financial integration may do more harm than good by resulting in a real appreciation has been forcefully articulated by Rodrik and Subramanian (2008). They argue that most developing countries suffer from a shortage not of capital but of profitable investment opportunities, and that the removal of investment barriers might make matters worse by reducing domestic firms' price competitiveness. The detrimental effect of an overvalued (real) exchange rate on economic growth is further explored by Rodrik (2008) who shows empirically that it results in an inflated nontradables sector and lower growth.

We will adopt Rodrik's (2008) approach and use the Penn World Table's "price level of Gross Domestic Product" as a real exchange rate. This variable gives "the PPP over GDP divided by the exchange rate times 100" (Heston et al., 2009), and an increase reflects a real appreciation. We use this variable directly as a regressand, but we also follow Rodrik (2008) in computing the *real overvaluation* at every point in time as the residual from a regression of the price level on GDP. The latter approach is motivated by the observation that there is a strong correlation between income levels and real exchange rates, which can be rationalized by referring to the models of Balassa (1964) and Samuelson (1964). Table 5 gives the results of estimating variants of the following regression equation:

$$\ln p_{it} - \ln p_{it-1} = \alpha + \beta \ln p_{i,t-1} + \gamma\ FDI_{it}^{M\&A} + \delta\ FDI_{it}^{Greenfield} + \sum_{k=1}^{N} \phi_k z_{it}^k + \xi_t + \varepsilon_{it} \qquad (3)$$

Where p_{it} is the price level or the level of overvaluation, and the z_{it}^k are a set of control variables. Including the lagged price level as a regressor allows for the possibility that, ceteris paribus, there is mean reversion in the real exchange rate.

The first two columns of Table 5 present the results of estimating equation (3) by OLS, using the oil dummy as well as regional dummies as control variables. The figures show that the initial price level has, indeed, a negative effect on the real appreciation in subsequent years, i.e. there is some mean reversion in the real exchange rate. More importantly, for our

original question, the M&A component of FDI has a significantly positive effect on the growth rate of the real exchange rate and the extent of real overvaluation, while the coefficient of Greenfield FDI is positive, but not significant. To account for the possibility that this result simply the results in columns (5.3) and (5.4), we added two variables that might have an effect on the real exchange rate while being correlated with the type of FDI inflows: if, for example, M&A type FDI were a speciality of rather well-developed economies, the positive coefficient of this variable might simply pick up Balassa-Samuelson effects. Moreover, Greenfield FDI might be a reaction to protectionism which, in turn, could have an impact on the real exchange rate. With these considerations in mind, we included the degree of urbanization and the Fraser Institute's index of the freedom to trade internationally. Not surprisingly, the urbanization variable has a significantly positive coefficient. By contrast, the positive effect of the trade-regime variable – with a higher value indicating less barriers to trade – is a bit odd. Most importantly, however, the result of the first two columns does not disappear: while M&A type investment results in a real appreciation, Greenfield FDI does not seem to have an effect on the real exchange rate. In column (5.5) and (5.6) we use the same set of variables, but apply the Blundell-Bond "Systems GMM" estimator that takes care of unobserved heterogeneity and potential endogeneity. Now, the pure price variable is no longer affected by either type of FDI. However, if we focus on the change of the Rodrik (2008) overvaluation variable, our previous result prevails.

These results show that the different types of FDI have differential effects on the real exchange rate and the extent of overvaluation. The detrimental effect of an overvalued real exchange rate on economic growth may, in turn, be the reason for our previous observation that Greenfield FDI enhances growth while M&A-type FDI doesn't.

7. Concluding Remarks

Foreign direct investment (FDI) comes in different forms: sometimes it increases the host country's capital stock, sometimes it amounts to a pure change of ownership. The goal of this paper was to explore whether two conceptually different types of FDI – mergers and

acquisitions (M&As) and Greenfield investment differ in their effect on economic growth. We have shown that they do: while Greenfield has a significantly positive influence on growth, M&A's have no effect. This finding is robust across various estimation methods and subsamples.

We have also shown that M&As result in a real appreciation while Greenfield FDI has no such effect. We offer as a tentative conclusion that large M&A inflows – while possibly increasing productivity at the firm level – has adverse economic effects by reducing the price competitiveness of domestic firms.

Where do we go from here? Of course, one road for further research is to further the transmission channels through which different types of FDI influence (or do not influence) growth. Moreover, the large difference between M&As and Greenfield investment demonstrates that we should have a deeper understanding of the economic and institutional forces that determine the composition of FDI inflows to individual developing countries.

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Data Appendix

Growth:	Growth rate of real GDP per capita in international dollars. Source: Heston et al. (2009)
FDI:	Net FDI inflows in US dollars relative to GDP. Sources: UNCTAD (2009).
M&A sales:	M&A sales in US dollars relative to GDP. Sources: UNCTAD (2009).
GDP:	Gross Domestic Product in current US dollars. Source: World Bank (2010)
Pop.:	Population. Source: Heston et al. (2009)
Sec. school enrolment:	Gross secondary school enrolment rate. Source: World Bank (2010)
Investment/GDP:	Share of investment in GDP. Source: Heston et al. (2009)
Population growth:	Population growth rate. Source: Heston et al. (2009)
Log(inflation rate):	Logarithm of CPI inflation rate. Source: World Bank (2010)
Government cons./GDP:	Share of government consumption in GDP. Source: Heston et al. (2009)
Trade Openness:	Sum of exports and imports relative to GDP. Source: Heston et al. (2009)
Fraser legal structure:	Index of legal structure and the security of property rights. Source: Fraser Institute (2009)
Oil:	Dummy for oil-exporting countries. Source: Morsy (2009)

Tables

Table 1: Determinants of growth, Pooled OLS estimations

	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)
FDI/GDP	1.594					
	(3.373)***					
M&A sales/GDP		-0.0442	-0.172			
		(-0.0455)	(-0.163)			
Greenfield FDI/GDP		1.864	1.772			
		(3.738)***	(3.299)***			
FDI/Pop.				0.000272		
				(2.660)***		
M&A sales/Pop.					-0.0447	-0.204
					(-0.231)	(-1.126)
Greenfield FDI/Pop.					0.434	0.350
					(3.715)***	(2.869)***
Initial GDP per capita	-0.0197	-0.0164	-0.0606	-0.0331	-0.0374	-0.0778
	(-0.837)	(-0.682)	(-2.368)**	(-1.265)	(-1.406)	(-3.087)***
Sec. school enrolment	0.0276	0.0390	0.120	0.00200	0.0410	0.115
	(0.370)	(0.540)	(1.543)	(0.0243)	(0.515)	(1.491)
Investment/GDP	0.121	0.104	0.219	0.237	0.194	0.313
	(0.825)	(0.714)	(1.272)	(1.465)	(1.235)	(1.610)
Population growth	-0.766	-0.849	-1.016	-0.690	-0.321	-1.011
	(-0.508)	(-0.555)	(-0.677)	(-0.453)	(-0.219)	(-0.651)
Log(inflation rate)			-0.0436			-0.0434
			(-3.340)***			(-3.122)***
Government cons./GDP			-0.102			0.00967
			(-0.967)			(0.0779)
Trade openness			-0.0583			-0.0418
			(-1.700)*			(-1.136)
Fraser legal structure			0.0290			0.0305
			(3.048)***			(2.863)***
Oil	0.0171	0.0135	0.00666	0.0184	0.0246	0.0130
	(0.710)	(0.537)	(0.310)	(0.695)	(0.950)	(0.527)
Constant	0.269	0.242	0.570	0.494	0.399	0.670
	(1.536)	(1.376)	(3.050)***	(2.544)**	(2.041)**	(3.526)***
Observations	318	318	262	317	318	262
R-squared	0.244	0.250	0.405	0.223	0.227	0.372
Adjusted R-squared	0.209	0.213	0.358	0.187	0.188	0.323

Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Regional and period dummies included but not reported.

Table 2: Determinants of growth, alternative estimators

	(2.1) FE	(2.2) FE	(2.3) 2SLS	(2.4) 2SLS	(2.5) BB	(2.6) BB
FDI/GDP	1.409		4.456		3.175	
	(2.751)***		(3.170)***		(3.760)***	
M&A sales/GDP		1.024		0.792		2.328
		(1.093)		(0.726)		(1.637)
Greenfield FDI/GDP		1.484		3.646		2.521
		(2.788)***		(2.584)***		(2.853)***
Initial GDP per capita	-0.319	-0.332	-0.0484	-0.0664	0.893	0.886
	(-4.746)***	(-4.483)***	(-1.823)*	(-2.415)**	(14.73)***	(15.08)***
Sec. school enrolment	-0.248	-0.308	0.0686	0.111	0.241	0.253
	(-1.585)	(-1.930)*	(0.837)	(1.297)	(1.377)	(1.423)
Investment/GDP	0.548	0.547	0.177	0.238	0.339	0.438
	(1.176)	(1.117)	(1.075)	(1.471)	(1.058)	(1.159)
Population growth	0.762	0.895	-1.872	-2.262	-0.0114	0.367
	(0.802)	(0.922)	(-0.815)	(-0.985)	(-0.00876)	(0.264)
Log(inflation rate)	-0.0547	-0.0527	-0.0414	-0.0427	-0.0630	-0.0601
	(-4.134)***	(-3.715)***	(-3.781)***	(-3.796)***	(-3.901)***	(-3.143)***
Government cons./GDP	-0.115	-0.108	-0.135	-0.111	-0.550	-0.395
	(-0.313)	(-0.257)	(-0.970)	(-0.821)	(-1.920)*	(-1.394)
Trade openness	0.136	0.159	-0.129	-0.0993	-0.133	-0.0948
	(2.647)***	(3.256)***	(-2.774)***	(-2.452)**	(-1.996)**	(-1.355)
Fraser legal structure	0.0235	0.0201	0.0155	0.0202	0.0361	0.0450
	(2.262)**	(1.884)*	(1.522)	(1.981)**	(2.451)**	(2.636)**
Oil			0.00784	0.00520	0.00553	0.0352
			(0.291)	(0.194)	(0.132)	(0.876)
Constant	2.614	2.769	0.542	0.661	0.885	0.841
	(4.638)***	(4.371)***	(2.943)***	(3.670)***	(2.300)**	(2.326)**
Observations	286	262	217	209	286	262
Number of countries	91	83	63	61	91	83
Adjusted R-squared	0.464	0.485	0.338	0.394		
F-test	14.26	18.99	9.402	9.215	421.4	383.8

Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Regional and period dummies included but not reported.

Table 3: Determinants of growth, alternative subsamples

	(3.1) No upper-middle-income countries	(3.2) No upper-middle-income countries	(3.3) No low-income countries	(3.4) No low-income countries	(3.5) Including small countries	(3.6) Including small countries
FDI/GDP	1.538		1.890		1.764	
	(2.532)**		(5.053)***		(3.526)***	
M&A sales/GDP		-0.253		0.551		0.195
		(-0.190)		(0.544)		(0.197)
Greenfield FDI/GDP		1.625		2.239		1.913
		(2.552)**		(4.749)***		(3.677)***
Initial GDP per capita	-0.0611	-0.0719	-0.0808	-0.0755	-0.0391	-0.0404
	(-2.315)**	(-2.314)**	(-2.726)***	(-2.580)**	(-1.643)	(-1.568)
Sec. school enrolment	0.0698	0.0962	-0.171	-0.163	0.0720	0.0864
	(0.789)	(1.086)	(-1.588)	(-1.546)	(0.996)	(1.136)
Investment/GDP	0.216	0.221	0.0314	0.0133	0.190	0.145
	(1.147)	(1.081)	(0.208)	(0.0896)	(1.283)	(0.960)
Population growth	-0.425	-0.367	-6.305	-6.184	-0.958	-0.879
	(-0.312)	(-0.244)	(-3.816)***	(-3.870)***	(-0.713)	(-0.612)
Log(inflation rate)	-0.0423	-0.0454	-0.0327	-0.0325	-0.0417	-0.0446
	(-3.090)***	(-2.777)***	(-3.421)***	(-3.482)***	(-3.791)***	(-3.556)***
Government cons./GDP	-0.0964	-0.0995	-0.183	-0.180	-0.127	-0.119
	(-0.831)	(-0.891)	(-1.326)	(-1.362)	(-1.186)	(-1.155)
Trade openness	-0.0889	-0.0844	-0.0462	-0.0484	-0.0856	-0.0820
	(-2.101)**	(-1.777)*	(-1.397)	(-1.540)	(-2.628)**	(-2.355)**
Fraser legal structure	0.0264	0.0246	0.0192	0.0183	0.0277	0.0262
	(2.499)**	(2.104)**	(2.064)**	(1.923)*	(3.144)***	(2.765)***
Oil	0.0411	0.0374	-0.0229	-0.0281	0.0115	0.00618
	(1.634)	(1.373)	(-0.885)	(-1.088)	(0.562)	(0.301)
Constant	0.553	0.685	1.086	1.043	0.441	0.425
	(2.765)***	(2.895)***	(5.141)***	(4.959)***	(2.447)**	(2.299)**
Observations	212	188	170	170	300	272
Adjusted R-squared	0.384	0.382	0.462	0.465	0.353	0.350

Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Regional and period dummies included but not reported.

Table 4: Determinants of growth, alternative periods

	(4.1) 1986-1995	(4.2) 1986-1995	(4.3) 1996-2005	(4.4) 1996-2005	(4.5) Inflation < 50%	(4.6) Inflation < 50%
FDI/GDP	1.311		1.236		1.343	
	(1.632)		(1.839)*		(2.498)**	
M&A sales/GDP		0.517		-1.274		-1.180
		(0.157)		(-1.390)		(-1.187)
Greenfield FDI/GDP		1.332		1.448		1.747
		(1.431)		(1.982)*		(3.176)***
Initial GDP per capita	-0.0287	-0.0316	-0.0843	-0.101	-0.0417	-0.0431
	(-1.015)	(-1.051)	(-2.132)**	(-2.390)**	(-1.899)*	(-2.024)**
Sec. school enrolment	0.178	0.168	0.100	0.152	0.0474	0.0775
	(1.781)*	(1.673)*	(1.037)	(1.565)	(0.707)	(1.189)
Investment/GDP	0.211	0.219	0.335	0.369	0.276	0.253
	(1.058)	(1.068)	(1.496)	(1.613)	(1.552)	(1.472)
Population growth	-0.698	-0.601	-0.846	-1.105	-2.216	-2.187
	(-0.488)	(-0.390)	(-0.419)	(-0.531)	(-1.083)	(-1.101)
Log(inflation rate)	-0.0420	-0.0424	-0.0422	-0.0491	-0.00562	-0.00621
	(-3.230)***	(-3.002)***	(-2.538)**	(-2.742)***	(-0.643)	(-0.705)
Government cons./GDP	-0.102	-0.0924	-0.122	-0.129	-0.0970	-0.114
	(-0.554)	(-0.506)	(-1.122)	(-1.126)	(-0.884)	(-1.082)
Trade openness	-0.112	-0.120	-0.0607	-0.0372	0.00294	0.00405
	(-1.806)*	(-1.855)*	(-1.966)*	(-1.145)	(0.0905)	(0.123)
Fraser legal structure	0.0310	0.0338	0.0467	0.0418	0.00952	0.0107
	(2.479)**	(2.672)***	(2.816)***	(2.319)**	(1.100)	(1.246)
Oil	-0.0585	-0.0661	0.0820	0.0740	0.0122	0.00719
	(-1.688)*	(-1.800)*	(1.915)*	(1.693)*	(0.604)	(0.349)
Constant	0.323	0.348	0.651	0.782	0.426	0.424
	(1.406)	(1.498)	(2.642)***	(3.105)***	(2.294)**	(2.382)**
Observations	131	121	155	141	225	225
Adjusted R-squared	0.353	0.341	0.414	0.425	0.339	0.357

Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Regional and period dummies included but not reported.

Table 5: Determinants of the real exchange rate

	(5.1) PWT	(5.2) Rodrik	(5.3) WDI	(5.4) PWT	(5.5) Rodrik	(5.6) PWT	(5.7) Rodrik
M&A sales/GDP	5.678	4.156	3.080	3.141	3.185	3.675	4.889
	(3.008)***	(2.342)**	(2.096)**	(1.855)*	(2.017)**	(1.377)	(1.746)*
Greenfield FDI/GDP	0.956	0.811	0.938	0.782	0.429	0.534	0.425
	(1.574)	(1.529)	(2.047)**	(1.417)	(0.847)	(0.829)	(0.574)
Initial price level	-0.449			-0.474		0.360	
	(-7.906)***			(-6.138)***		(3.397)***	
Oil	0.0685	0.0317	-0.0871	0.0837	0.0406	0.123	0.0673
	(1.318)	(0.677)	(-2.484)**	(1.708)*	(1.042)	(1.683)*	(1.040)
Initial overvaluation		-0.445			-0.428		0.327
		(-8.803)***			(-5.452)***		(3.305)***
Initial price level (WDI)			-0.558				
			(-9.027)***				
Urbanization				0.00261	0.000410	0.00525	0.00175
				(1.920)*	(0.399)	(1.977)*	(0.798)
Fraser trade				0.0497	0.0273	0.0260	-0.0109
				(2.139)**	(1.174)	(0.697)	(-0.268)
Constant	1.500	-0.142	-0.479	1.040	-0.351	1.731	-0.316
	(7.533)***	(-2.167)**	(-10.38)***	(2.931)***	(-2.228)**	(3.335)***	(-1.128)
Observations	338	338	336	291	291	291	291
Adjusted R-squared	0.320	0.307	0.442	0.327	0.281		
Number of wbcode_id						83	83

Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Regional and period dummies included but not reported.

Figure 1: Greenfield FDI and M&A Sales in Developing Countries and Emerging Markets.

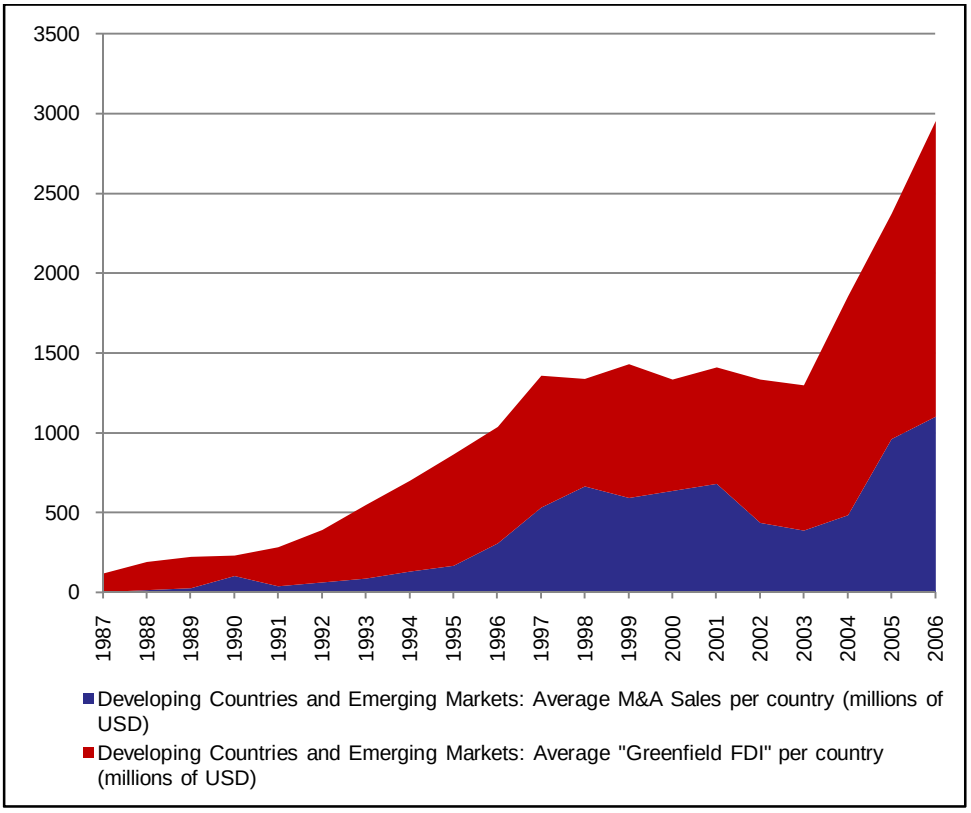
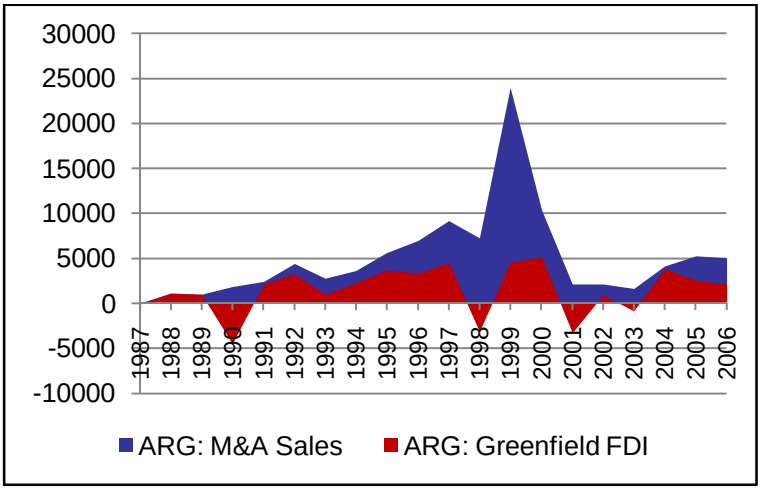
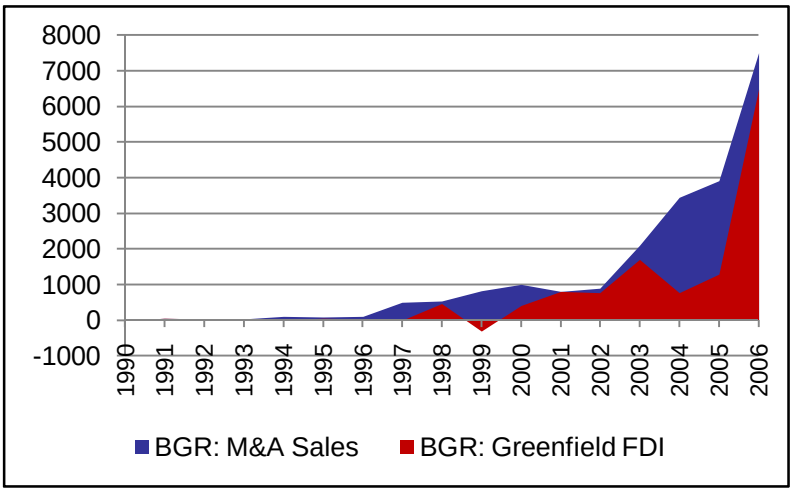


Figure 2: Greenfield FDI and M&A Sales in Selected Countries

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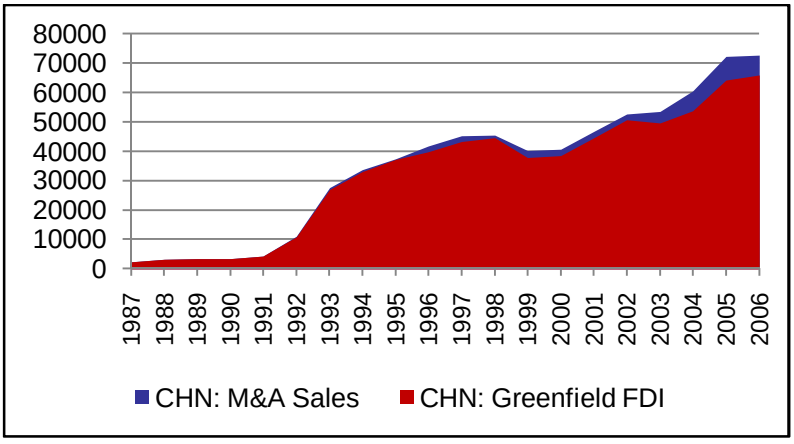
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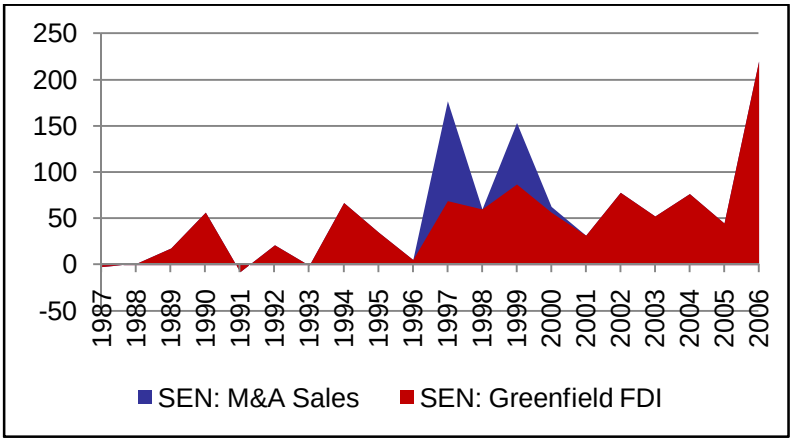
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